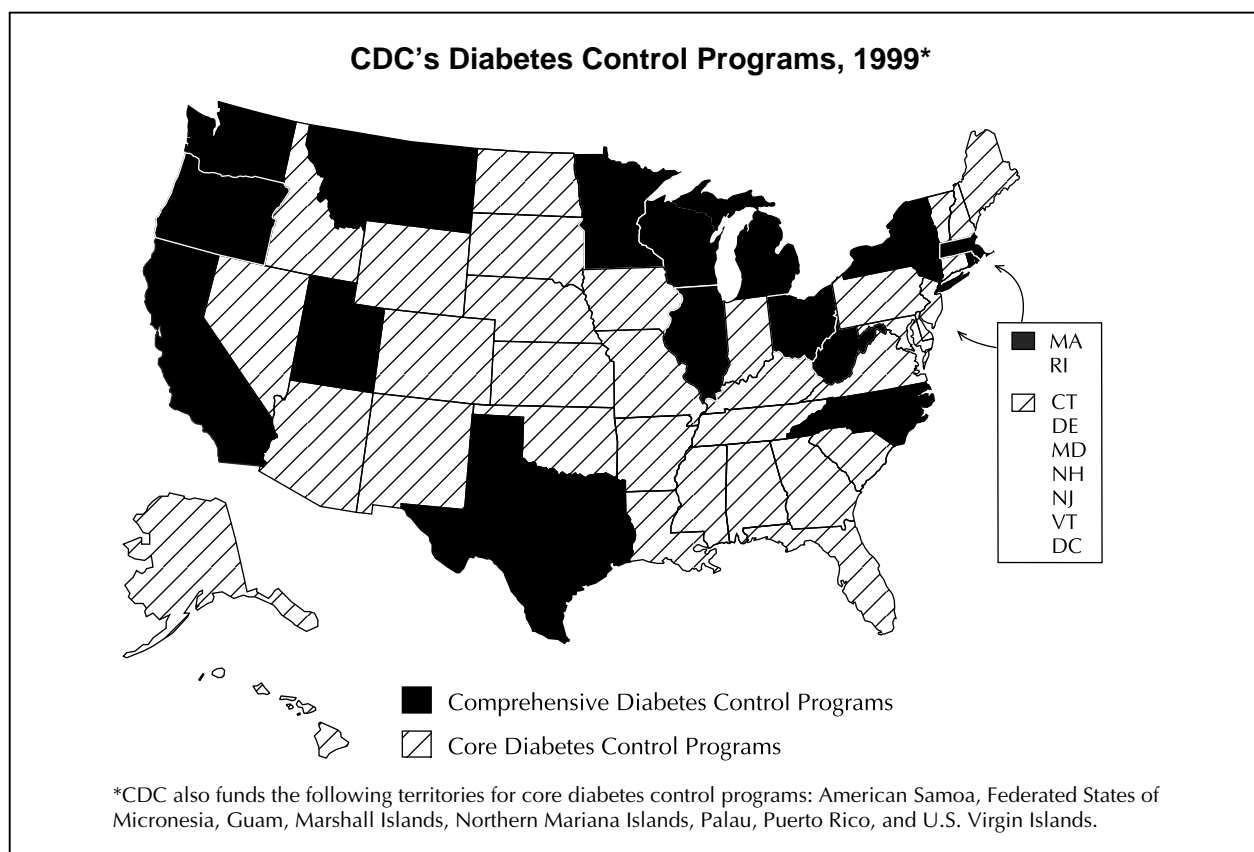


# Diabetes:

## A Serious Public Health Problem

AT-A-GLANCE  
2000



*"Those who suffer losses due to diabetes are not just statistics on a chart.  
They are people whose talents and wisdom are needed and whose problems deserve our unified efforts.  
Together we can join to make life more just and more joyful for generations to come."*

David Satcher, MD, PhD  
Assistant Secretary for Health and Surgeon General



**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES**  
Centers for Disease Control and Prevention



# Diabetes: A Serious Public Health Problem

## What Is the Health Burden?

The facts about diabetes leave no doubt about its seriousness. The seventh leading cause of death in the United States,\* diabetes contributes to more than 193,000 deaths each year. Currently, an estimated 10.3 million people in the United States have been diagnosed with diabetes—a sixfold increase over the past four decades—and another 5.4 million people have undiagnosed diabetes. These people are all at increased risk for serious health complications, including

- **Blindness.** Diabetes is the leading cause of new cases of blindness in adults aged 20–74 years.
- **Kidney failure.** Diabetes is the leading cause of end-stage (chronic, irreversible) kidney disease.
- **Amputations.** Diabetes is the leading cause of lower-extremity amputations not related to injury.
- **Cardiovascular disease.** People with diabetes are 2–4 times more likely to develop heart disease or stroke than people without diabetes.

Diabetes and its complications occur among Americans of all ages and racial and ethnic groups. The burden of this disease is heavier among elderly Americans—more than 18% of adults over age 65 have diabetes—and certain racial and ethnic populations, including African Americans, Hispanics/Latinos, and American Indians and Alaska Natives. For example, American Indians and Alaska Natives are 2.8 times more likely to have diagnosed diabetes than non-Hispanic whites of similar age. Several studies have also shown increased rates among certain Asian and Pacific Islander populations.

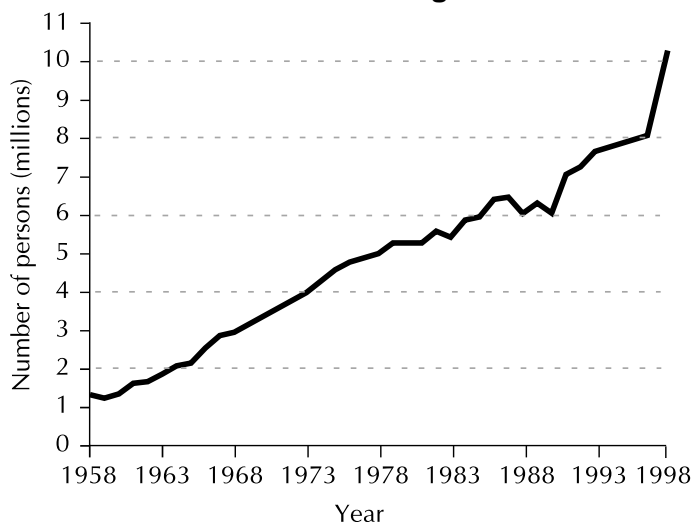
## What Are the Economic Costs?

Diabetes imposes a heavy economic burden each year. The American Diabetes Association estimates that the nation spends more than \$98 billion annually on the direct and indirect costs of diabetes.

The full burden of diabetes—in terms of death, complications, and costs—is not easy to measure. Mortality records often fail to reflect the role of diabetes in premature deaths, and the costs related to undiagnosed diabetes are unknown. Furthermore, for families and communities, the loss of people's lives and abilities transcends numerical measures.

\*When heart disease and stroke are combined (as part of total cardiovascular diseases), diabetes is the sixth leading cause of death.

Number of Persons With Diagnosed Diabetes



Source: National Institutes of Health and Centers for Disease Control and Prevention, 1998.

## What Is Diabetes?

The term *diabetes* describes either a deficiency of insulin or a decreased ability of the body to use insulin, a hormone secreted by the pancreas. Insulin allows glucose (sugar) to enter cells and be converted to energy. Insulin is also needed to synthesize protein and store fats. In uncontrolled diabetes, glucose and lipids (fats) remain in the bloodstream and, with time, damage vital organs and contribute to heart disease.

Diabetes is classified into two main types: type 1 and type 2. Between 5% and 10% of people with diabetes have type 1, which most often appears in childhood or the teenage years. Type 2 affects 90%–95% of people with diabetes and usually appears after age 40.

Some women develop diabetes during pregnancy. Known as gestational diabetes, this condition occurs in 2%–5% of all pregnancies. Other, less common types of diabetes, which together may account for 1%–2% of all diagnosed cases, result from specific genetic syndromes, surgery, drugs, malnutrition, infections, and other illnesses.

## Many Complications of Diabetes Can Be Prevented

### What Are the Opportunities for Prevention?

The increasing burden of diabetes and its complications is alarming, but the good news is that much of the burden of this major public health problem can be prevented with early detection, improved delivery of care, and better education on diabetes self-management. The following are examples of diabetes-related complications that could be prevented or reduced:

#### *Eye Disease and Blindness*

Each year, an estimated 12,000–24,000 people become blind because of diabetic eye disease. Early detection and treatment can prevent up to 90% of this blindness. If all people with diabetes received recommended screening and follow-up for eye disease, the annual savings to the federal budget could exceed \$470 million.

#### *Kidney Failure*

Each year, about 33,000 people with diabetes develop kidney failure, and more than 100,000 people with diabetes receive treatment for this condition. Medicare costs for this treatment average \$51,000 per person; total Medicare expenditures for treating diabetic kidney failure exceed \$5.1 billion each year. Because the rate of kidney failure is rapidly increasing, these costs are expected to rise. At least half of the new cases of diabetes-related kidney failure each year could be prevented. The total first-year cost of treating these preventable cases is about \$842 million.

#### *Lower-Extremity Amputations*

About 86,000 people undergo diabetes-related lower-extremity amputations each year. These amputations cost more than \$860 million annually in hospitalization costs alone. Over half of these amputations could be prevented.

#### *Complications of Pregnancy*

Women with preexisting diabetes give birth to more than 18,000 babies each year. For every \$1 invested in preconception care for these mothers, \$1.86 can be saved by preventing adverse maternal and infant health outcomes associated with diabetes.

### *Poorly Controlled Glucose Levels*

Results from a recent study in the United Kingdom indicate that intensive treatment to control glucose levels in people with type 2 diabetes reduces the risk of complications significantly more than diet therapy alone. Because 90%–95% of people with diabetes have type 2, these findings can help prevent many serious complications. Similarly, the Diabetes Control and Complications Trial—a national 10-year study of people with type 1 diabetes—confirmed that intensive therapy to control blood glucose levels can significantly prevent the onset or delay the progression of eye, kidney, and nerve damage.

### **Preventing Blindness Caused by Diabetes**

- **Diabetes is the leading cause of new cases of blindness among adults aged 20–74 years.**
- **Twenty-five percent of adults with diabetes, or about 1.6 million people, report that they are visually impaired.**
- **Early detection and treatment could prevent up to 90% of diabetes-related blindness.**
- **Only 60% of people with diabetes are receiving annual dilated eye examinations—a key strategy for preventing blindness caused by diabetes.**

**Source: Centers for Disease Control and Prevention, 1998.**

## CDC's National Leadership

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CDC joins with state and territorial health departments and other partners to focus efforts on all populations at increased risk for diabetes and its complications. With fiscal year 2000 funding of \$51 million, CDC provides leadership for a coordinated, multifaceted approach targeting diabetes. Goals are to increase awareness and education about diabetes, promote early detection of diabetes and treatment of its complications, improve the quality of diabetes care, and enhance access to diabetes care by improving and expanding services.

### Implement Effective State Programs Nationwide

CDC supports state- and territorial-based diabetes control programs to reduce the complications associated with diabetes. In fiscal year 1999, CDC provided limited support to 34 states, 8 territories, and the District of Columbia for core diabetes programs and more substantive support to 16 states for comprehensive programs. The core programs do not address needs statewide; however, they serve as the framework on which states build more comprehensive programs. When resources become available, CDC plans to expand its comprehensive programs to additional states.

Examples of state activities include the following:

- The **California** Diabetes Control Program conducted a diabetes project to assess the effects of case management on blood glucose levels among MediCal (Medicaid) patients. Blood glucose levels had declined significantly at 18 months of follow-up among patients who received diabetes care guidelines, patient follow-up, blood glucose monitoring instruction, and nutrition education in addition to usual care from primary care providers. Improved glucose control decreases the patient's risk of complications and ultimately decreases health care costs.
- The **Maine** Diabetes Control Program worked with local diabetes educators to administer a comprehensive diabetes self-management education program in 90% of Maine's hospitals and many health centers. Participants reported significant reductions over a 5-year period in diabetes-related hospitalizations (43%), emergency room visits (36%), and illness-related physician

visits (31%). They also reported increases in visits to eye care providers (12%) and podiatrists (51%).

- The **Michigan** Diabetes Control Program's Upper Peninsula Diabetes Outreach Network established a diabetes care and education program with hospitals, health departments, and home care agencies. Participants in the program experienced a 45% lower rate of hospitalizations, a 31% lower rate of lower-extremity amputations, and a 27% lower death rate than nonparticipants. This program has been replicated in five new outreach networks throughout the state.
- The **Utah** Diabetes Control Program works with local partners to ensure that people with diabetes throughout the state have access to education on self-care to help minimize the development of debilitating complications of diabetes. Partly as a result of these efforts, the percentage of Utahns with diabetes who never monitored blood glucose levels decreased from 33% in 1991 to 12% in 1997, and the percentage of those who had received a dilated eye examination in the past year increased from 46% in 1991 to 71% in 1997.

### Implement the National Diabetes Education Program

CDC and the National Institutes of Health jointly sponsor the National Diabetes Education Program (NDEP). Through collaboration with over 100 public and private partners, this program seeks to improve the treatment and outcomes of people with diabetes, promote early detection, and ultimately prevent the onset of diabetes.

The NDEP develops educational tools and community-based interventions and establishes public and private sector partnerships to address the needs of people with diabetes and raise general awareness about the disease. Recently, the NDEP launched its first public awareness campaign with the theme, "Control Your Diabetes. For Life." Included in the campaign are public service announcements targeting general audiences, as well as messages directed toward Hispanic/Latino communities. Campaigns addressing the needs of African Americans, American Indians, and Asian Americans/Pacific Islanders are currently being developed.

## Better Define the Diabetes Burden

Understanding how diabetes is distributed in the population is essential to effectively targeting prevention efforts. CDC uses multiple sources of data to track diabetes, including its Behavioral Risk Factor Surveillance System, which provides state-specific information on risk factors and health care practices related to diabetes. CDC also uses the National Health and Nutrition Examination Survey and the National Health Interview Survey. In addition, CDC maintains a national system that provides data about diabetes; these data are widely disseminated through diabetes surveillance reports. CDC will also explore new methods for tracking diabetes among special populations.

CDC develops projections of the economic burden of diabetes by examining how Medicare and Medicaid data can be used to generate information on diabetes trends and the anticipated costs of treatment and preventive services. To help focus future research, CDC has published a comprehensive, annotated bibliography of all recent economic studies of diabetes.

## Translate Science Into Quality Care

CDC is working with partners in managed care to determine how to improve care for people with diabetes. Through Diabetes Translational Research Centers and a supporting Data Coordinating Center, CDC is

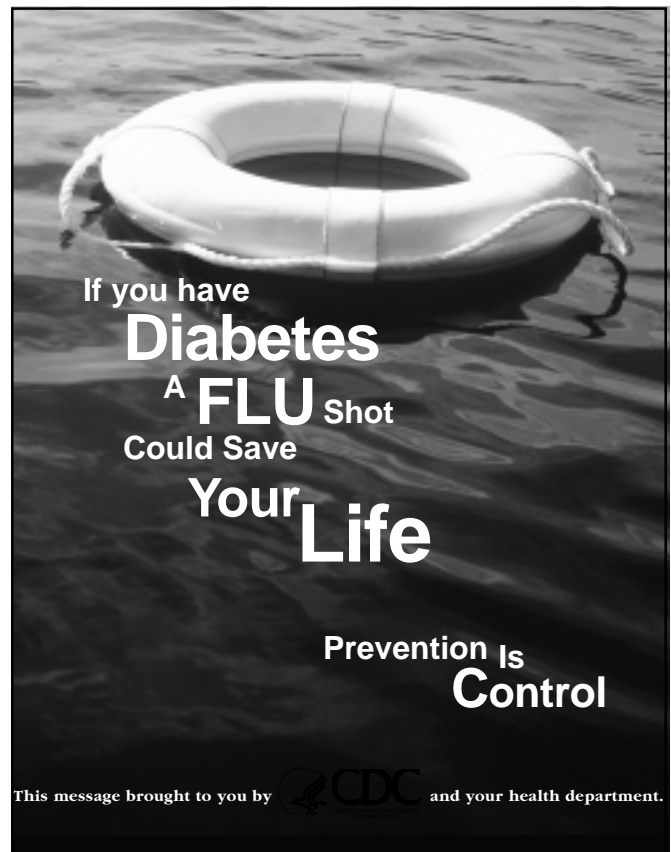
- Assessing how health care providers and delivery systems implement accepted standards of care.
- Exploring variations in the implementation of quality diabetes care.
- Developing and testing strategies to close the gap between existing practices and optimal standards of care.

CDC has dedicated \$3 million to the National Diabetes Laboratory to support scientific studies that will improve the lives of people with diabetes. Current research includes efforts to find noninvasive ways to monitor blood glucose to prevent hypoglycemia, which can cause comas; to improve instruments that measure blood glucose; and to better understand the role of autoantibodies in the development of type 1 diabetes.

## Develop Innovative Approaches


- **Diabetes and Flu/Pneumococcal Campaign**—Although people with diabetes have an increased

risk of death from influenza and pneumonia, only 50% get an annual flu shot. As part of CDC's ongoing public service campaign *Diabetes. One Disease. Many Risks*, the **Diabetes and Flu/Pneumococcal Campaign** educates people with diabetes about the importance of getting flu and pneumonia shots. CDC develops campaign kits that it disseminates through national media channels, health systems, and state diabetes control programs. Individual states can tailor these materials (available in English and Spanish) to their own populations.



If you have  
**Diabetes**  
A **FLU** Shot  
Could Save  
Your **Life**

Prevention Is  
**Control**

This message brought to you by  and your health department.

- **Diabetes Today**—This program provides health professionals and community leaders with the skills needed to mobilize communities and to develop appropriate interventions to prevent diabetes complications and improve diabetes care. One outcome of this educational program is the development of a strategic plan that is community owned and culturally relevant to the local population. Two Diabetes Today centers—one for the continental United States and Alaska and the other for Hawaii and the Pacific basin—will provide training and technical assistance.

## Target Special Populations

- **National Diabetes Prevention Center**—American Indian populations have a high incidence and prevalence of diabetes and its complications. In 1998, CDC funded a center in Gallup, New Mexico, to promote diabetes prevention and control among the Navajo Nation and the Zuni Pueblo. The center will develop culturally relevant prevention strategies through focused intervention research, surveillance, program evaluation, training, and tribal capacity-building activities. Research findings, strategies, and benefits will ultimately be applicable to other American Indian tribes and similar populations.
- **National Minority Organizations**—In 1998, CDC selected six national minority organizations to support NDEP programs to reach African American, Hispanic/Latino, American Indian, and Asian American/Pacific Islander populations with culturally and linguistically appropriate diabetes prevention and control messages. These organizations are developing and delivering diabetes care messages through trusted community channels and developing partnerships with other national organizations that serve these groups.
- **National Hispanic/Latino Diabetes Initiative for Action**—This special population initiative develops diabetes prevention strategies that are relevant to U.S. Hispanic/Latino communities. CDC is incorporating strategic recommendations from an expert consultant group into the new 5-year funding cycle for state diabetes control programs.
- **Diabetes and Women's Health Monograph**—CDC is developing a monograph, *Diabetes and Women's Health Across the Life Stages: A Public Health Perspective*, to highlight the effect of diabetes on the life cycle of women. The monograph will describe the epidemiology of the disease, address community needs, and examine psychosocial issues related to women with diabetes.
- **Project DIRECT**—Project DIRECT is a multiyear community diabetes demonstration project in a

predominantly African American community of 25,000 in southeast Raleigh, North Carolina. Community outreach, health promotion activities, and quality improvement strategies for local health care providers are the key program intervention components. Diabetes management and nutrition courses, organized walking programs, and diabetes screenings are being implemented to improve the health-related quality of life for this community. Lessons learned will be incorporated into CDC's 59 state- and territorial-based diabetes control programs.

## Build National Partnerships

Committed to building strong national partnerships to reduce the burden of diabetes, CDC collaborates with its partners to provide data for sound public health decisions, inform the public about diabetes, and ensure optimal diabetes care and education for all people with diabetes in the United States. One product of these partnerships is the *National Diabetes Fact Sheet: National Estimates and General Information on Diabetes in the United States*, produced by CDC in collaboration with the following organizations: American Association of Diabetes Educators, American Diabetes Association, Department of Veterans Affairs, Health Resources and Services Administration, Indian Health Service, Juvenile Diabetes Foundation International, National Council of La Raza, National Diabetes Education Program, National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health, and the U.S. Department of Health and Human Services' Office of Minority Health.

## Offer International Treatment Options

By 2025, 300 million people worldwide will have diabetes. Because most of these cases will be in developing countries and among poorer people, CDC is helping develop low-cost treatment options. As a World Health Organization Collaborating Center for Diabetes, CDC is working with the Pan American Health Organization to implement the Declaration of the Americas, which includes developing guidance documents for international diabetes control programs.

**For more information or additional copies of this document, please contact the  
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